

REMARKS

Claims 1-6, 8-12 and 14-18 were canceled. Claims 7 and 13 are currently pending in the present application, all of which have been amended.

Rejection under 35 U.S.C. § 102

Claims 7-8 and 13-14 were rejected under 35 U.S.C. § 102(b) as being anticipated by *Ohran* (US 5,835,953). Applicants respectfully traverse such rejection insofar as it might apply to the claims as amended herein.

Amended Claim 7 (and similarly Claim 13) now recites a step of "designating only one node within a shared storage system an owner node for metadata relating to all input/output (I/O) relationships of a region of storage" and a step of "designating remaining nodes within said shared storage system client nodes."

On page 2 of the Office Action, the Examiner asserts that the claimed designating steps are disclosed by Figure 1 of *Ohran* with primary system 12 being characterized as the claimed owner node and backup system 14 being characterized as the claimed client node. Assuming *arguendo* that primary system 12 in Figure 1 of *Ohran* can be characterized as the claimed owner node, and since the Examiner had chosen to characterize backup system 14 as the claimed client node, there still remains one node (*i.e.*, the other primary system 12) left in Figure 1 that was not designated by the Examiner. Since the claimed designating step requires all remaining nodes to be designated as client nodes, such designation will conflict with the Examiner's characterization of primary system 12 since primary system 12 cannot be both the claimed owner node and the claimed client node.

On page 5 of the Office Action, the Examiner points out that "the primary system [of *Ohran*] is further described as being 'one or more' systems." If that is the position the Examiner takes, then the Examiner's characterization is definitely contrary to the claimed step of "designating only one node within a shared storage system an owner node for metadata relating to all input/output (I/O) relationships of a region of storage" (emphasis added). Since more than

one system is designated as primary system 12, *Ohran*'s teaching is different from the claimed designating step that requires only one node to be the owner node.

Claim 7 also recites a step of "in response to a host I/O request arriving at one of said client nodes, suspending said host I/O request by said one client node and inquiring said owner node if said region of storage associated with said host I/O request has been copied."

On page 2 of the Office Action, the Examiner asserts that the claimed in response to step and the claimed suspending step are disclosed by *Ohran* in decision block 94 and block 100 of Figure 5, respectively. According to *Ohran*, decision block 94 allows a primary backup processing block 54 to determine "whether a backup has been initiated by the backup system or whether a backup should be initiated by the primary system" (col. 20, lines 3-4), and block 100 "identifies a logically consistent backup state" (col. 20, lines 55-56). Since block 94 is not a condition precedent for block 100, thus, block 100 was not performed in response to decision block 94. In addition, block 100 does not disclose any suspending step, and is not related to any sort of suspending step. Block 100 also does not disclose the claimed step of "inquiring said owner node if said region of storage associated with said host I/O request has been copied."

On page 5 of the Office Action, the Examiner points out that "step 100 proceeds after initiation of the backup system." Step 100 indeed proceeds after an initiation of the backup system, but it is irrelevant to the claimed suspending and inquiring steps. This is because the claimed suspending and inquiring steps are both performed "in response to a host I/O request arriving at one of said client nodes." In other words, the claimed suspending and inquiring steps are only performed if a host I/O request has arrived at one of the client nodes. Block 100 is performed "if the backup is initiated by the primary system, or if decision block 94 detects that a backup has been initiated by the backup system" (col. 20, 51-54), which is different from "a host I/O request arriving at one of said client nodes," as claimed.

The Examiner asserts that "in the broadest reasonable interpretation of a 'suspension,' the process of identifying a logically consistent state for the purposes of establishing a snapshot as

a suspension of the I/O request." However, the claimed suspending step specifically calls for suspending a host I/O request from the condition precedent (*i.e.*, in response to a host I/O request arriving at one of said client nodes), which is also the step that is not disclosed by *Ohran*.

Next, Claim 7 recites a step of "placing a lock record by said owner node against an appropriate metadata for said region of storage associated with said host I/O request if said region of storage associated with said host I/O request has not been copied."

On page 3 of the Office Action, the Examiner asserts that the claimed placing step was disclosed by *Ohran* in block 102 of Figure 5. According to col. 20, line 65 - col. 21, line 1 of *Ohran*, block 102 allows an identified logically consistent state to be preserved via a snapshot. However, taking a snapshot is completely different from "placing a lock record," as claimed.

On page 6 of the Office Action, the Examiner points out that "in the broadest reasonable interpretation of a 'lock,' that a snapshot acts as a lock and preserves the data from changes." One way to look at why such interpretation is unreasonable is that the claimed step of "placing a lock record" has a companion step of "removing said lock record." If *Ohran*'s snapshot can be interpreted as the claimed locking, then *Ohran* must have a step for removing the snapshot. However, *Ohran* does not disclose any step of removing the snapshot that was taken in block 102. As such, the interpretation of *Ohran*'s snapshot as the claimed lock does not appear to be reasonable.

Claim 7 further recites a step of "if said host I/O request is a Target Read, transferring data to a host by said one client..." On page 3 of the Office Action, the Examiner asserts that the claimed host I/O request was disclosed by *Ohran* in block 112 of Figure 6. The claimed host I/O request in the claimed transferring step is the same host I/O request from the above-mentioned suspending step. However, block 112 is related to a backup read request, which is different from what the Examiner had characterized as the claimed host I/O request previously.

In addition, Claim 7 recites a step of "if said host I/O request is a Target Write or Source Write, performing a copy-on-write by said one client node, and sending an UNLC request to said owner node by said one client node at the completion of said copy-on-write" and a step of "upon the receipt of said UNLD message, releasing said suspended write operation by said one client node and completing said write operation to said host." The claimed performing, sending and releasing steps are not disclosed by *Ohran*.

Because the claimed invention recites novel features that are not disclosed by *Ohran*, the § 102 rejection is believed to be overcome.

CONCLUSION

Claims 7 and 13 are currently pending in the present application. Applicants believe that Claims 7 and 13 are in condition for allowance. The remaining prior art cited by the Examiner but not relied upon has been reviewed and is not believed to show or suggest the claimed invention.

No fee or extension of time is believed to be necessary; however, in the event that any addition fee or extension of time is required for the prosecution of the present application, please charge it against IBM Deposit Account No. **09-0449**.

Respectfully submitted,



Antony P. Ng
Registration No. 43,427
DILLON & YUDELL, LLP
8911 N. Capital of Texas Hwy., suite 2110
Austin, Texas 78759
(512) 343-6116

ATTORNEY FOR APPLICANTS